

Chapter 9.1 & 9.3 Factoring Worksheet

Directions: Factor each of the following completely if possible.

- 1.) $x^2 - 16 = (x+4)(x-4)$
- 2.) $y^2 - 36 = (y+6)(y-6)$
- 3.) $144 - 49a^2 = (12+7a)(12-7a)$
- 4.) $x^2 - 196 = (x+14)(x-14)$
- 5.) $\frac{16}{81} - \frac{25}{144}a^2 = (\frac{4}{9} + \frac{5}{12}a)(\frac{4}{9} - \frac{5}{12}a)$
- 6.) $x^2 - 7x + 12 = (x-3)(x-4)$
- 7.) $a^2 + 8a + 16 = (a+4)(a+4)$
- 8.) $t^2 + 4t + 4 = (t+2)(t+2)$
- 9.) $4m^2 + 12m + 9 = (2m+3)(2m+3)$
- 10.) $25a^2 - 20ab + 4b^2 = (5a-2b)(5a-2b)$
- 11.) $25k^2 + 90kj + 81j^2 = (5k+9j)(5k+9j)$
- 12.) $x^2 + 8x + 12 = (x+6)(x+2)$
- 13.) $a^2 + 10a + 25 = (a+5)(a+5)$
- 14.) $b^2 + 9b + 14 = (b+7)(b+2)$
- 15.) $m^2 - 9m + 20 = (m-5)(m-4)$
- 16.) $k^2 - 4k - 12 = (k-6)(k+2)$
- 17.) $g^2 - 4g + 3 = (g-3)(g-1)$
- 18.) $w^2 - 8w - 20 = (w-10)(w+2)$
- 19.) $a^2 - 6a - 40 = (a-10)(a+4)$
- 20.) $x^{2m} - 24x^m - 112 = (x^m-28)(x^m+4)$
- 21.) $x^{4a} - 11x^{2a} - 126 = (x^{2a}-13)(x^{2a}+2)$
- 22.) $7x^2 - 12x + 5 = (7x-5)(x-1)$
- 23.) $5y^2 - 36y + 7 = (5x-7)(x-1)$
- 24.) $5y^2 + 14y - 3 = (5x-1)(x+3)$
- 25.) $7n^2 + 4n - 11 = (7x+11)(x-4)$
- 26.) $5a^2 - 54a - 11 = (5x+1)(x-11)$
- 27.) $3x^2 - 10x - 13 = (3x-13)(x+1)$
- 28.) $6x^2 - 7x - 2 = \text{PRIME}$
- 29.) $8n^2 + 14n + 3 = (2n+3)(4n+1)$
- 30.) $2a^2 + a - 10 = (2a+5)(a-2)$
- 31.) $2x^2 - 11x + 14 = (2x-7)(x-2)$
- 32.) $5x^2 - 28x + 15 = (5x-3)(x-5)$
- 33.) $3y^2 + 11y + 6 = (3y+2)(y+3)$
- 34.) $9a^2 + 18a + 8 = (3a+4)(3a+2)$
- 35.) $6t^2 - 11t - 10 = (3t+2)(2t-5)$
- 36.) $x^2 - xy - 12y^2 = (x-4y)(x+3y)$
- 37.) $8a^2 - 2ab - b^2 = (4a+b)(2a-b)$
- 38.) $21m^2 + 10mn + n^2 = (3m+n)(7m+n)$
- 39.) $10c^4 + 3c^2 - 1 = (5c^2-1)(2c^2+1)$
- 40.) $10x^2 + 23x + 12 = (5x+4)(2x+3)$
- 41.) $12n^2 - 17n + 6 = (3x-2)(4x-3)$
- 42.) $12y^2 - 8y - 15 = (6x+5)(2x-3)$
- 43.) $18a^2 - 35a + 12 = (9x-4)(2x-3)$
- 44.) $24x^2 - 46x - 35 = (12x+7)(2x-5)$
- 45.) $6y^4 - 23y^2 - 18 = (3x+2)(2x-9)$
- 46.) $2x^4y^4 - 7x^2y^2 + 6 = (2x^2y^2-1)(x^2y^2-6)$
- 47.) $x^{6m} - 7x^{3m} + 12 = (x^{3m}-3)(x^{3m}-4)$
- 48.) $6x^{2m} + 19x^m + 15 = (2x+3)(3x+5)$
- 49.) $12x^{6a} - 8x^{3a}y^{2b} - 15y^{4b} = (3x^{3a}-5y^{2b})(4x^{3a}+3y^{2b})$
- 50.) $12n^2 - 15n - 3 = 3(4n^2-5n-1)$
- 51.) $3a^4 - 8a^3 + a^2 = a^2(3a^2-8a+1)$
- 52.) $3x^2 - 21x + 36 = 3(x-3)(x-4)$
- 53.) $2n^2 + 4n - 30 = 2(n+5)(n-3)$
- 54.) $16y^2 - 4 = 4(2y+1)(2y-1)$
- 55.) $18c^2 - 50 = 2(3c+5)(3c-5)$
- 56.) $4n^2 + 40n + 100 = 4(n+5)(n+5)$
- 57.) $5x^2 - 40x + 80 = 5(x-4)(x-4)$
- 58.) $y^4 - 7y^2 - 18 = (y^2+2)(y+3)(y-3)$
- 59.) $-y^2 + 36 = -(y+6)(y-6)$
- 60.) $-x^2 + 8x - 16 = -(x-4)(x-4)$
- 61.) $5n^3 - 625 = 5(n-5)(n^2+5n+25)$
- 62.) $8xy + 20x + 6y + 15 = (4x+3)(2y+5)$
- 63.) $x^3 + 4x^2 + 6x + 24 = (x^2+6)(x+4)$
- 64.) $6a^3 + 20a^2 - 21a - 70 = (2a^2-7)(3a+10)$
- 65.) $75x^2y^5 - 30x^3y^4 + 45x^4y^3 = 15x^2y^3(5y+3)(y-x)$
- 66.) $8a^3 - 4a^2 - 40a = 4a(2a-5)(a+2)$
- 67.) $3a^3 - 75ab^2 = 3a(a+5b)(a-5b)$
- 68.) $-3y^2 + 27 = -3(y+3)(y-3)$
- 69.) $25y^4 - 101y^2 + 4 = (5y+1)(5y-1)(y+2)(y-2)$
- 70.) $y^4 + 64y = y(y+4)(y^2-4y+16)$
- 71.) $8x^3 - 15y - 20xy + 6x^2 = (2x^2-5y)(4x+3y)$
- 72.) $x^6 - y^6 = (x+y)(x-y)(x^4+x^2y^2+y^4)$
- 73.) $3x^4 - 3000x = 3x(x-10)(x^2+10x+100)$
- 74.) $24x^3 - 375 = 3(2x-5)(4x^2+10x+25)$
- 75.) $36x^8 - 13x^4 + 1 = (3x^2+1)(3x^2-1)(2x^2+1)(2x^2-1)$

* #72 as diff of squares $(x+y)(x-y)(x^2-xy+y^2)(x^2+xy+y^2)$